

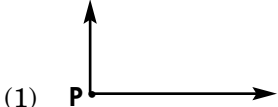
CHAPTER TWO ASSESSMENTS

PART A QUESTIONS

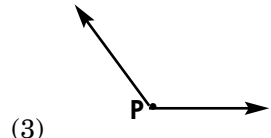
- 1 Which terms both represent scalar quantities?
 (1) displacement and velocity (3) displacement and speed
 (2) distance and speed (4) distance and velocity

- 2 A softball player leaves the batter's box, overruns first base by 3.0 meters, and then returns to first base. Compared to the total distance traveled by the player, the magnitude of the player's total displacement from the batter's box is
 (1) smaller (2) larger (3) the same

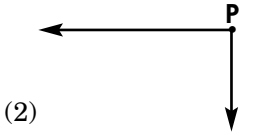
- 3 The vector at the right represents the resultant of two forces acting concurrently on an object at point *P*. Which pair of vectors best represents two concurrent forces that combine to produce this resultant force vector?



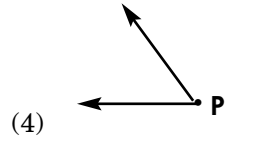
(1)



(3)

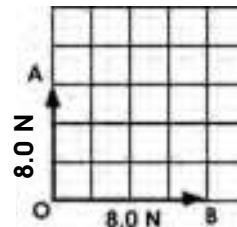



(2)




(4)

- 4 Two forces (*OA* and *OB*) act simultaneously at point *O* as shown on the diagram to the right. The magnitude of the resultant force is closest to
 (1) 8.0 N (3) 15 N
 (2) 11 N (4) 16 N

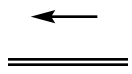


- 8 Which two terms represent a vector quantity and the scalar quantity of the vector's magnitude, respectively?
 (1) acceleration and velocity (3) speed and time
 (2) weight and force (4) displacement and distance
- 9 Which pair of terms are vector quantities?
 (1) force and mass (3) momentum and acceleration
 (2) distance and displacement (4) speed and velocity
- 10 Distance is to displacement as
 (1) force is to weight (3) velocity is to acceleration
 (2) speed is to velocity (4) impulse is to momentum
- 11 A ship changes direction several times and finishes 20 miles north of its starting point. This displacement is a vector quantity because it has
 (1) both magnitude and direction
 (2) magnitude but no direction
 (3) direction but no magnitude
 (4) neither magnitude nor direction
- 12 Which diagram represents the vector with the largest downward component? (Assume each vector has the same magnitude.)
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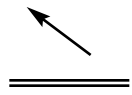
(1) **Ground**



(2) **Ground**



(3) **Ground**

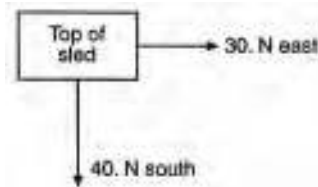


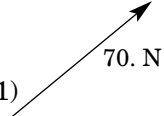
(4) **Ground**
- 13 The maximum number of components that a single force may be resolved into is
 (1) one (2) two (3) three (4) unlimited
- 14 A lawn mower is pushed with a constant force of F , as shown in the diagram at the right. As angle θ between the lawn mower handle and the horizontal increases, the horizontal component of F
 (1) decreases (2) increases (3) remains the same



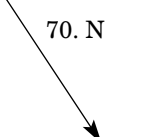
PART B QUESTIONS

- 15 Two students push on a sled. One pushes with a force of 30. newtons east and the other exerts a force of 40. newtons south, as shown in the top view diagram at the right. Which vector best represents the resultant of these two forces?

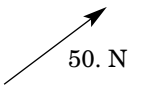


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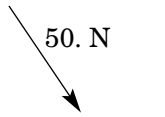
(1) 70. N



(2) 70. N



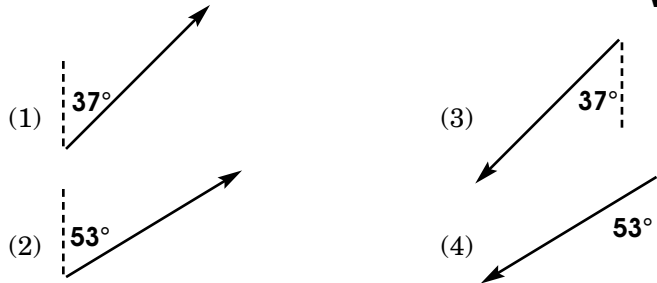
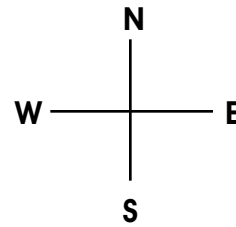
(3) 50. N



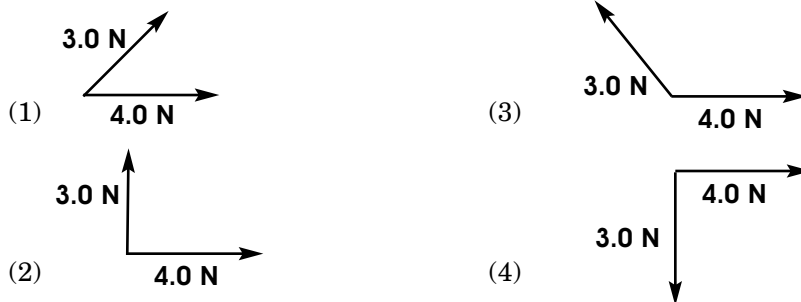
(4) 50. N

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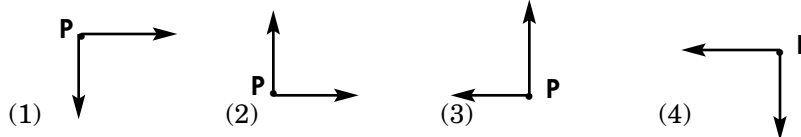
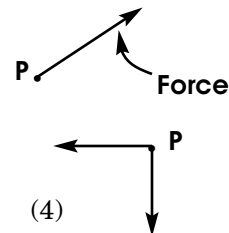
- 16 An object is displaced 3 meters to the west and then 4 meters to the south. Which vector shown below best represents the resultant displacement of the block?



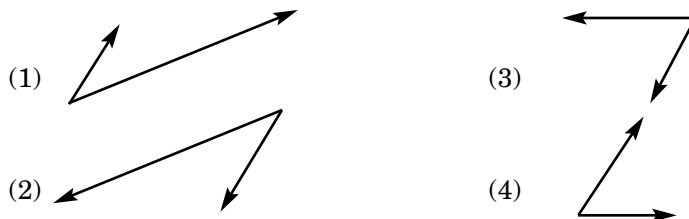
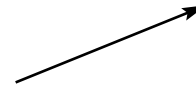
- 17 A 3.0-newton force and a 4.0-newton force act concurrently on a point. In which diagram below would the orientation of these forces produce the greatest net force on the point?



- 18 The diagram at the right represents a force acting at point P . Which pair of concurrent forces would produce equilibrium when added to the force acting at point P ?

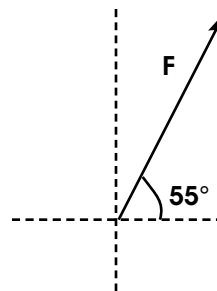


- 19 If the force vector shown in the diagram at the right is resolved into two components, these two components could best be represented by which diagram at the right?



- 20 The horizontal component of F in the diagram at the right is

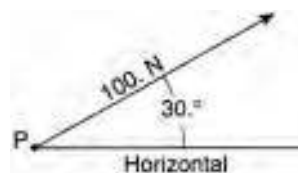
- (1) $F \sin 55^\circ$
- (2) $F \cos 55^\circ$
- (3) $F/\sin 55^\circ$
- (4) $F/\cos 55^\circ$



- 21 A car travels 12.0 kilometers due north and then 8.00 kilometers due west going from town A to town B . What is the magnitude of the displacement of a helicopter that flies in a straight line from town A to town B ? [1]

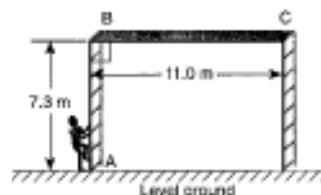
- 22 A 100.-newton force acts on point P , as shown in the diagram at the right.

- a The magnitude of the vertical component of this force is _____ N [1]



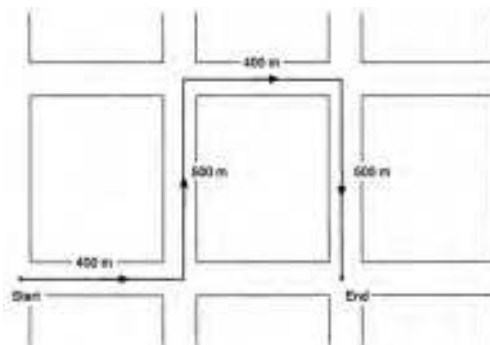
- b The magnitude of the horizontal component of this force is _____ N [1]

- 23 As shown in the diagram at the right, a painter climbs 7.3 meters up a vertical scaffold from A to B and then walks 11.0 meters from B to C along a level platform. The magnitude of the painter's total displacement while moving from A to C is _____ m [1]

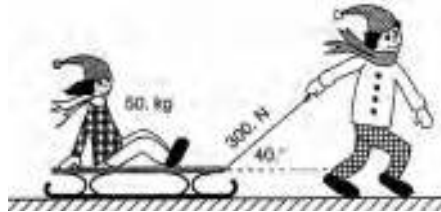


- 24 The map at the right shows the route traveled by a school bus. What is the magnitude of the total displacement of the school bus from the start to the end of its trip?

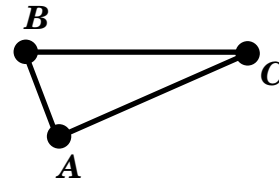
_____ m [1]



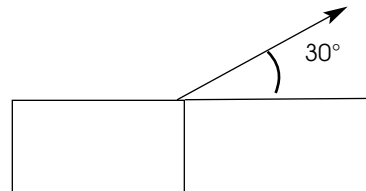
- 25 The diagram at the right shows a child pulling a 50.-kilogram friend on a sled by applying a 300.-newton force on the sled rope at an angle of $40.^{\circ}$ with the horizontal.



- a The vertical component of the 300.-newton force is approximately _____ N [1]
- b The horizontal component of the 300 newton force is approximately _____ N [1]
- 26 A student follows the path ABC, as illustrated in the diagram at the right. There is a difference between the distance traveled and the displacement. What is the difference between these two quantities? [1]



- 27 A student walks 3 blocks south, 4 blocks west, and 3 blocks north. What is the displacement of the student? [1] _____
- 28 If a woman runs 100 meters north and then 70 meters south, her total displacement will be [1] _____
- 29 A student walks 1.0 kilometer due east and 1.0 kilometer due south. Then she runs 2.0 kilometers due west. The magnitude of the student's distance is [1] _____
- 30 What is the total displacement of a student who walks 3 blocks east, 2 blocks north, 1 block west, and then 2 blocks south? [1] _____
- 31 A force of 100. newtons is applied to an object at an angle of 30° from the horizontal as shown in the diagram at the right. What is the magnitude of the vertical component of this force? [1]

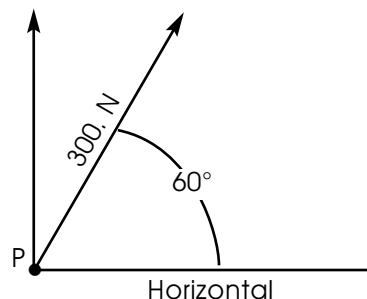


- 32 A plane flies 400. kilometers south and then 300. kilometers east. The magnitude of the displacement is [1] _____

- 33 A resultant force of 10. newtons is made up of two component forces acting at right angles to each other. If the magnitude of one of the components is 6.0 newtons, the magnitude of the other component must be [1] _____

PART C QUESTIONS

- 34 A 300.-newton force acts on point P , as shown in the diagram at the right. The magnitude of the vertical and horizontal components of this force are [2] _____
[show all work]



- 35 A student sailed 10. km north, 5.0 km northeast, then 6.0 km east. Select an appropriate scale and draw a graphical solution of the student's trip.
- a* What was the total displacement of the student? [1]
- b* What was the total distance the student sailed? [1]